Space Weather Forecast

Issued on Tuesday 1 October 2024 at 13:13 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

---

Space Weather Forecast Headline: Moderate-class flares likely throughout. Chance of Minor-Moderate Geomagnetic storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity is Moderate, with a long period M7.6 flare peaking at 30/2358 UTC, originating from the largest sunspot group in the southeast quadrant. Moderate activity is likely to continue with further Moderate flares probable. These most likely from this same region, which also gives a chance of an isolated strong flare.

A couple of coronal mass ejections (CMEs) observed leaving the Sun 29/0612UTC and 30/1545UTC may give glancing blows over the next few days, but confidence in detail is very low.

Solar Wind / Geomagnetic Activity: Solar wind parameters were indicative of a weak coronal hole fast wind. Solar winds remained at slightly elevated levels but have slowly eased through the period. Interplanetary Magnetic Field was at weak levels. The north-south component was also at weak levels. Geomagnetic activity was at Quiet to unsettled levels.

Energetic Particles / Solar Radiation: The count rate of energetic particles remained at background levels with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is likely to continue, with a chance of isolated strong flares. These most likely to originate from an increasingly complex sunspot region located in the southeast.

Solar Wind / Geomagnetic Activity: A coronal mass ejection which left the Sun from the southwest quadrant on 29/0544 UTC has been reanalysed with possible glancing impacts at Earth until early day 2 (02 Oct). A further CME from the 30th may give a glancing blow on day 3 (03 Oct). In the absence of any CME influences Solar winds are likely to return to background levels in the next couple of days.

Quiet geomagnetic conditions are expected, with a chance of Unsettled to Active intervals due to the waning coronal hole fast wind environment. There is then a chance of Minor-Moderate geomagnetic storms occurring due to the glancing arrival of the 29 Sep CME, this risk continuing but reducing into day 3 (03 Oct). Confidence becomes lower by day 4 (04 Oct) due to the number of filaments currently on the disc and uncertainty regarding CME arrival times.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.

Energetic Particles / Solar Radiation: The count rate of energetic particles is forecast to persist at background levels, with no solar radiation storms expected.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	30	20	20	10
Strong	G3	No	1	1	1	0
Severe	G4	No	1	1	1	0
Extreme	G5	No	1	1	1	0

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	60	60	70	60
Very Active	R3-R5 (X Class)	No	30	20	30	20

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	15	15	15
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

© Crown Copyright 2024. All Rights Reserved.